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cont

probing sequences, which can all hybridize to a target sequence of a single target oligonucleotide.

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8. (Amended) An ensemble according to Claim 1, wherein k is less than about $10 \times n$.

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13. (Amended) A device comprising a substrate carrying an ensemble of target entities according to Claim 1, with each of the probing units being at a defined location on the substrate.

18. (Amended) A method according to Claim 15, wherein the ensemble of probing units is fixed on a solid substrate at a known coordinate on the substrate.

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19. (Amended) A method according to Claim 15, characterized in that the probing units are selected using an optimization model in a computer simulation.

20. (Amended) A method according to Claim 19, characterized in that the level of expression of each of the target oligonucleotides in an assayed sample can be calculated by applying the following vectorial equation (1):

c-Te

(1)

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in which

c is a k -dimensional vector of values c_1, c_2, \dots, c_k , representing the level of hybridization of target oligonucleotides to each of probing units, P_1, P_2, \dots, P_k , respectively,

e is an n -dimensional vector of values $(e_1, e_2, \dots, e_j, \dots, e_n)$, representing the level of expression of each of the target oligonucleotides S_1, S_2, \dots, S_n , respectively, and

T is an $n \times k$ matrix of values $t_{(ij)}$ being the expected level of hybridization of target oligonucleotide S_j with probing units P_i .

22. (Amended) A method according to Claim 20, wherein the matrix T is a binary matrix.

23. (Amended) A method according to Claim 20, wherein the matrix T is a non-binary matrix.

24. (Amended) A method according to Claim 15, wherein said ensemble is that according to Claim 1.

27. (Amended) A method according to Claim 25, characterized in that the vector e is a sparse vector.

28. (Amended) A method according to Claim 25, wherein the ensemble comprises also reference probing units and level of

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hybridization of target oligonucleotides to each probing units is compared to the level of hybridization of the target oligonucleotides to the reference probing units.

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08 } 29. (Amended) A method according to Claim 25, wherein the probing units are immobilized on a substrate, each at a defined coordinate on the substrate.

30. (Amended) A method according to Claim 25, wherein the measured level of target oligonucleotides hybridized to the probing units is compared to the measured level obtained with a control sample.

B10 32. (Amended) A system according to Claim 31, wherein said ensemble is defined in Claim 2.

B11 34. (Amended) A combination according to Claim 33, wherein said ensemble is defined by Claim 2.